St. Louis Co.
Sm-Refuse

THE ELBRING COMPANY

CONSULTING ENGINEERS • LAND SURVEYORS

SINCE 1876

Site: Westlake RE. Al2
ID # MSD079900932
Break: 17.8
Other:
7-2-73
CM

July 2, 1973

Mr. Robert M. Robinson
Director Bureau Solid Waste Management
Department of Public Health & Welfare
Division of Health of Missouri
Jefferson City, Missouri 65101

RE: West Lake Landfill
St. Louis County, Missouri

Dear Mr. Robinson:

We are forwarding to you attached to this letter the results of laboratory analysis of the second set of underground water samples collected from the four test wells at the West Lake Landfill, St. Louis County. These samples were collected on June 18, 1973.

If you have any questions, please let us know.

Very truly yours,

THE ELBRING COMPANY

Robert R. Leavy

Robert R. Leavy
Vice President

RRL/acy
Enclosure

CC: W.J. McCullough, West Lake Landfill Inc.
Floyd C. Wallace

Westlake Landfill

June 18, 1973

SET #2

Parameter	Units	Sample Identification Test Hole 1	Test Hole 2	Test Hole 3	Test Hole 4
Alkalinity	mg/l	630	352	626	964
Arsenic	mg/l	0.197	0.251	0.150	0.200
COD	mg/l	1,012	1,630	1,760	1,010
Chloride	mg/l	30	15	10	35
Chromium (+6)	mg/l	<.01	<.01	<.01	<.01
Copper	mg/l	0.88	2.25	1.23	1.20
Hardness (Total)	mg/l	634	428	666	1,100
Iron	mg/l	568	1,436	614	557
Lead	mg/l	0.99	4.76	1.09	1.48
Nitrogen, Nitrate	mg/l	<.02	<.01	<.01	<.01
pH		6.6	6.8	6.8	6.7
Phenol	mg/l	0.001	0.001	0.001	0.001
Solids, Total Dissolved	mg/l	1,074	782	868	1,290

Consulting environmental engineers
12161 Lackl- ' Road
St: Louis, Mi_ ,uri 63141
(314) 434-6960

!yckman/Edgerley/Tomlinson & Associates, Inc.

Offices:
McLean, Virginia (Washington, D.C.)
Dayton, Ohio
Memphis, Tennessee
Denver, Colorado
Orlando, Florida
Arlington, Texas (Dallas-Ft. Worth)
Houston, Texas
Casper, Wyoming
Chicago, Illinois
Northumberland, England
Rome, Italy

July 18, 1973
RETA 1895

Mr. Robert R. Leavy
Vice President
The Elbring Company
19 North Meramec Avenue
Clayton, Missouri 63105

Dear Mr. Leavy:

Enclosed is the data for the fifth set of water samples. Please feel free to call me if any problems arise.

Sincerely yours,

D. J. McQueen
Environmental Scientist

Enclosure

DJM/ckn

Consulting environmental engineers

12161 Lac' ıd Road
St. Louis, r. .souri 63141
(314) 434-6960

Ryckman/Edgerley/Tomlinson & Associates, Inc.

Offices:

McLean,
Virginia
(Washington, D.C.)

Dayton,
Ohio

Memphis,
Tennessee

Denver,
Colorado

Orlando,
Florida

Arlington,
Texas
(Dallas-Ft. Worth)

Houston,
Texas

Casper,
Wyoming

Chicago,
Illinois

Northumberland,
England

Rome,
Italy

July 16, 1973
RETA 1895

Mr. Robert R. Leavy
Vice President
Th Elbring Company
19 North Meramec Avenue
Clayton, Missouri

Dear Mr. Leavy:

Enclosed is the data for the third and fourth set of water samples. Please feel free to call me if any problems arise.

Sincerely yours,

Don McQueen

D. J. McQueen
Environmental Scientist

DJM

West Mike Landfill

LABORATORY REPORT FORM

Project No. 1895 Date: July 1, 1973

The Elbring Company

Sample Set 3

Parameter	Units	Sample Identification Test Hole 1	Test Hole 2	Test Hole 3	Test Hole 4
Alkalinity (Total)	mg/l $CaCO_3$	550	224	624	718
Arsenic	mg/l	0.104	0.229	0.149	0.197
COD	mg/l	432	1550	506	650
Chloride	mg/l	25	20	20	30
Chromium(+6)	mg/l	<0.01	<0.01	<0.01	<0.01
Copper	mg/l	0.69	1.29	0.84	1.00
Hardness (Total)	mg/l $CaCO_3$	1060	810	720	1160
Iron (Total)	mg/l	1373	1991	1609	1667
Lead (Total)	mg/l	0.85	1.59	0.52	0.76
Nitrogen, Nitrate	mg/l	<0.01	<0.01	<0.01	<0.01
pH	pH Units	6.6	6.8	6.8	6.7
Phenol	mg/l	<0.001	<0.001	<0.001	<0.001
Solids, Total Dissolved	mg/l	1370	934	796	1486

Westlake Landfill

LABORATORY REPORT FORM

Project No. 1895 Date: July 16, 1973

The Elbring Company

TEST 4

Parameter	Units	Sample Identification Test Hole 1	Test Hole 2	Test Hole 3	Test Hole 4
Alkalinity (Total)	mg/l $CaCO_3$	432	252	388	492
Arsenic	mg/l	0.224	0.378	0.056	0.113
COD	mg/l	560	2480	620	780
Chloride	mg/l	24	17	13	34
Chromium (+6)	mg/l	<0.01	<0.01	<0.01	<0.01
Copper	mg/l	1.11	2.08	1.11	1.25
Hardness (Total)	mg/l $CaCO_3$	1060	780	790	1130
Iron (Total)	mg/l	950	1118	960	987
Lead (Total)	mg/l	0.77	2.18	0.81	0.97
Nitrogen, Nitrate	mg/l	<0.01	<0.01	<0.01	<0.01
pH	pH Units	6.4	6.8	6.8	6.6
Phenol	mg/l	<0.001	<0.001	<0.001	<0.001
Solids, Total Dissolved	mg/l	1256	1040	968	1312

West Lake Landfill

LABORATORY REPORT FORM

Project No. 1895 Date: July 18, 1973

The Elbring Company

SET NO 5

Sample Identification

Parameter	Units	Test Hole 1	Test Hole 2	Test Hole 3	Test Hole 4
Alkalinity (Total)	mg/l $CaCO_3$	722	294	576	914
Arsenic	mg/l	0.393	0.320	0.284	0.406
COD	mg/l	1180	3340	3840	1640
Chloride	mg/l	21	14	12	38
Chromium (+6)	mg/l	<0.01	<0.01	<0.01	<0.01
Copper	mg/l	1.71	2.80	11.0	2.01
Hardness (Total)	mg/l $CaCO_3$	1060	670	610	1190
Iron (Total)	mg/l	1048	1277	7680	1212
Lead (Total)	mg/l	1.02	2.64	6.4	2.07
Nitrogen, Nitrate	mg/l	<0.01	<0.01	<0.01	<0.01
pH	pH Units	6.4	6.9	6.9	6.6
Phenol	mg/l	<0.001	<0.001	<0.001	<0.001
Solids, Total Dissolved	mg/l	1288	880	664	1366

THE DIVISION OF HEALTH
OF MISSOURI

C N-REF St. Louis Co.

June 29, 1973

Mr. Clifford Mitchell
Assistant Commissioner for Environmental Health
St. Louis County Health Department
801 South Brentwood
Clayton, Missouri 63105

Dear Mr. Mitchell:

On June 27, Mr. Floyd C. Wallace and Mr. W. J. McCullough with the West Lake Landfill and Mr. Robert Leavy, a consulting engineer, visited our office to discuss the future operation of the West Lake Landfill. We are sending you a copy of four well logs and a map of the West Lake Landfill showing the location of the tested wells. Also enclosed is a letter from Mr. Leavy dated June 22, 1973, which provides results of the first water supplies taken from the test wells at the West Lake Landfill. You will note from the well logs that the soil in the area of the landfill are generally sand with some silt. The results of the water samples along with the soil borings indicating permeable soils in the area of the West Lake Landfil brings this division to the preliminary conclusion that potentially serious pollution of the ground water is occuring as a result of the West Lake Landfill.

We have verbally advised the representatives with the West Lakes Landfill that the present site can not be approved by the State for use as a sanitary landfill in accordance with Senate Bill No. 387. We would give consideration to the site being considered for use as a demolition landfill.

Mr. McCullough has requested that the Division of Health and the Missouri Geological Survey make a preliminary investigation of the limestone quarry and a location south of the West Lake Landfill for possible use as a sanitary landfill. We have requested an investigation from the Missouri Geological Survey and have requested that they notify your office regarding the time of their investigation. We would also appreciate your comments regarding the proposed locations.

Representatives of West Lake Landfill, Inc. have indicated they would present a proposal to this division within 30 days, regarding the proposed locations and operation of a sanitary landfill. We trust they will be contacting the county regarding zoning restrictions and requirements of your department.

For your information, we are sending you a third rough draft of the "Proposed Missouri Solid Waste Rules and Regulations", which includes a section on sanitary landfills. We would appreciate your comments regarding the proposed regulations. We trust this will bring you up to date regarding our information and evaluation of the West Lake Landfill.

By the direction of L. F. Garber, Director, Section of Environmental Health Services.

Sincerely,

Robert M. Robinson
Director
Bureau of Solid Waste Management

RMR:sab

Enclosures

cc: Missouri Geological Survey

THE ELBRING COMPANY

CONSULTING ENGINEERS • LAND SURVEYORS

SINCE 1876

June 22, 1973

Mr. Robert M. Robinson
Director Bureau Solid Waste Management
Department of Public Health & Welfare
Division of Health of Missouri
Jefferson City, Missouri 65101

RE: West Lake Landfill
St. Louis County, Missouri

Dear Mr. Robinson:

We are in this letter forwarding to you the results of laboratory analyses of the first set of underground water samples collected from the four test wells at the West Lake Landfill, St. Louis County. These samples were collected on June 12, 1973

	TEST WELL			
	NO. 1	NO. 2	NO. 3	NO. 4
Total Dissolved Solids, Mg/liter	14,947	2,485	11,827	18,653
Total Hard	760	513	770	1,164
Total Alkalinity	610	320	640	950
pH	6.5	7.5	7.1	7.0
Chemical Oxygen Demand (COD)	612	624	268	1,102
Chlorides	60	20	20	60
Iron	519	569	372	590
Phenol	-001	-001	-001	-001
Hexavalent Chromium	-001	-001	-001	-001
Copper	0.77	1.41	0.45	0.98
Lead	0.80	1.84	3.20	1.31
Arsenic	0.133	1.151	0.086	0.292
Nitrate (NO_3)	0.03	0.02	0.02	0.02

Construction of test wells was in accordance with comments in your letter, dated April 11, 1973. Sampling procedure was also followed.

There was an intermittent period between April 11, 1973 and May 25, 1973 when the test wells were drilled. This time delay was due to selecting a drilling company, and rainy weather conditions.

As stated in our letter to you dated March 19, 1973, wells were drilled and 2 inch inside diameter plastic pipe installed to elevation 413.00 M.S.L. On June 12, 1973 when the first samples were collected the test holes had silted considerably. The silt consisting of very fine sand in the order of 5 to 10 microns, and traces of clay. Obtaining water samples from the test wells was no problem.

Collecting of the second set of samples on June 18, 1973 showed changed condition in that additional silting had occurred in the test wells, but representative water samples were obtained.

On June 20, and 21, 1973 the driller on our orders cleaned the silt from the test wells. The third set of water samples will be collected on June 25, 1973 and ifas anticipated, well conditions will be better.

The silting of test wells is considered as being due to the very fine sand filtering in through the voids in crushed stone around the outside of the plastic pipe, then through the perforations in the pipe wall to the inside of the pipe. Underground water pressure due to variation in head by changing river stages causes a fluid condition and boiling.

Results of laboratory analysis of the second sampling on June 18, 1973, should be available within the next few days.

If you have any questions regarding the above, please let us know.

Very truly yours,

THE ELBRING COMPANY

Robert R. Leavy

Robert R. Leavy
Vice President

RRL/csw

cc: Floyd C. Wallace
W.J. McCullough, West Lake Landfill, Inc.

SUBSURFACE EXPLORATION
by
WABASH DRILLING COMPANY
110 Angelica St. • St. Louis, Mo. 63147 • 421-2460

Boring No. 1
Coordinates
Surf. Elev. 456.32
Gr. Water Elev. -8.0

Date of Drilling:
Started 5-24-73
Finished 5-24-73

Client Elbring Surveying Company
Job Name Westlake Quarry Client's Job No.
Job Location Taussig Rd. & Old St. Charles Rock Rd. City St. Louis State Mo.
Casing O.D. I.D. Sampler O.D. I.D.
Casing Hammer lbs. fall Sampler Hammer lbs. fall
W. D. Co. Foreman H. Conner Client's Inspector

Depth Below Ground Surface	Blows On Casing	Sample Number	Blows On Sampler	Penetration Of Sampler (inches)	FIELD IDENTIFICATION OF SOIL (Include relative firmness, relative moisture, color, mention all soil constituents, etc.)	REMARKS
					Crushed stone & mixed clay fill.	
6'0"					Tan silt & fine tan river sand.	
18'0"					Tan & gray fine & medium river sand.	Set & extract 43'0" of 4" casing.
43'4"						

SUBSURFACE EXPLORATION DATA
by
WABASH DRILLING COMPANY

110 Angelica St. • St. Louis, Mo. 63147 • 421-2460

Date of Drilling:
Started 5-23-73
Finished 5-24-73

Boring No.
Coordinates
Surf. Elev. 446.073
Gr. Water Elev. -9.0

Client Elbring Surveying Company

Job Name Westlake Quarry Client's Job No.

Job Location Taussig Rd & Old St. Charles Rock Road City St. Louis Co State Mo.

Casing O.D. I.D. Sampler O.D. I.D.

Casing Hammer lbs. fall Sampler Hammer lbs. fall

W. D. Co. Foreman H. Conner Client's Inspector

Depth Below Ground Surface	Blows On Casing	Sample Number	Blows On Sampler	Penetration Of Sampler (inches)	FIELD IDENTIFICATION OF SOIL (Include relative firmness, relative moisture, color, mention all soil constituents, etc.)	REMARKS
					Crushed stone & Mixed clay fill.	
3'0"					Tan silt & some fine tan river sand.	
10'0"					Tan, fine river sand & trace of tan silt.	Set & extract 30'0" of 4" casing.
16'0"					Tan, fine river sand.	
33'1"					Total depth of drilling at 33'1"	

Elbring Surveying Company
19 N. Meramec Ave.,
Saint Louis, [illegible]souri 63105

Gentlemen:

We have completed soil test borings for you at
WESTLAKE QUARRY, TAUSSIG RD & OLD ST CHARLES ROCK ROAD, ST LOUIS CO. MO'
The result of these borings are shown on the enclosed boring log forms. Jar samples and rock cores will be retained in our yard for 90 days after completion of drilling, pending notification of proper disposition.

WABASH DRILLING COMPANY

Soil test boring results

SUBSURFACE EXPLORATION DATA

by

WABASH DRILLING COMPANY

110 Angelica St. • St. Louis, Mo. 63147 • 421-2460

Date of Drilling:
Started 5-24-
Finished 5-25-73

Boring # 3
Coordinates
Surf. Elev. 442.112
Gr. Water Elev. -2.5

Client Elbring Surveying Company

Job Name Westlake Quarry Client's Job No.

Job Location Taussig Rd. & Old St. Charles Rock Road City St. Louis Co State Mo.

Casing O.D. I.D. Sampler O.D. I.D.

Casing Hammer lbs. fall Sampler Hammer lbs. fall

W. D. Co. Foreman H. Conner Client's Inspector

Depth Below Ground Surface	Blows On Casing	Sample Number	Blows On Sampler	Penetration Of Sampler (inches)	FIELD IDENTIFICATION OF SOIL (Include relative firmness, relative moisture, color, mention all soil constituents, etc.)	REMARKS
					Wet, tan silt & fine tan river sand.	
6'0"					Wet, tan & gray fine river sand.	
14'0"					Wet, tan & gray, fine & medium river sand.	Set & extract 15'0" of 4" casing.
29'2"					Total depth of drilling at 29'2"	

SUBSURFACE EXPLORATION DATA
by
WABASH DRILLING COMPANY

110 Angelica St. • St. Louis, Mo. 63147 • 421-2460

Date of Drilling:
Started 5-22-72
Finished 5-23-72

Boring No. 4
Coordinates
Surf. Elev. 458.125
Gr. Water Elev. -16.0

Client Elbring Surveying Company
Job Name Westlake Quarry Client's Job No.
Job Location Taussig Rd. & Old St. Charles Rock Road City St. Louis Co State Mo.
Casing O.D. I.D. Sampler O.D. I.D.
Casing Hammer lbs. fall Sampler Hammer lbs. fall
W. D. Co. Foreman H Conner Client's Inspector

Depth Below Ground Surface	Blows On Casing	Sample Number	Blows On Sampler	Penetration Of Sampler (inches)	FIELD IDENTIFICATION OF SOIL (Include relative firmness, relative moisture, color, mention all soil constituents, etc.)	REMARKS
					Crushed limestone fill.	
3'0"					Gray & tan silty clay & some fine tan river sand.	
11'0"					Tan silt & tan fine river sand.	Set & extract 45'0" of 4" casing.
20'0"					Tan fine river sand & Trace of tan silt.	
25'0"					Tan, fine river sand.	
45'3"						

Total depth of drilling at 45'3"

THE ELBRING COMPANY

CONSULTING ENGINEERS • LAND SURVEYORS

SINCE 1876

March 19, 1973

Missouri Division of Health
P.O. Box 570
Jefferson City, Missouri 65101

Attention: Mr. John R. Meyer
Chief of Solid Waste Planning
Bureau of Solid Waste Management

RE: West Lake Landfill Inc., St. Louis County, Missouri

Gentlemen:

In accordance with your letter of February 14, 1973 to Mr. W.J. McCullough, West Lake Landfill, Inc., we are presenting to you for approval our procedure for the construction of four test wells at the West Lake Landfill for the purpose of determining whether contamination from the landfill is entering the ground water of Missouri River alluvium.

There is enclosed herewith a site plan of West Lake Quarries and Material Co. showing the location and ground elevations of the proposed test wells. The locations are approximately that which were selected at our recent meeting at the site, at which Mr. Floyd C. Wallace was present.

We propose to drill all four wells to an elevation of 413.00 MSL. Boring will be done by either continuous flight auger (4"dia.) borings if the hole is stable, or by hollow flight auger (7 1/2"dia.), and casing in unstable conditions. Geologic log of drill hole will be made and samples identified every 5 feet or less if soil change occurs.

When refusal is encountered or elevation 413.00 MSL is reached, a 1 1/2 inch standard black seamless steel pipe will be placed in the bored hole. At the bottom of the pipe a 3 foot long 60 mesh well point will be assembled to the pipe. At the well point location a sand filter will be installed and a positive impervious seal placed at the ground surface to avert entry of surface water. Upper end of pipe to have screw threads to receive pipe cap.

Water samples will be taken from each well once each day for one week, and two times per week thereafter. Water samples to be taken from well by inserting 3/8 inch diameter suction pipe inside of 1 1/2 inch diameter pipe. Water to be pumped from well by hand operated pitcher pump. Pump to be primed with potable water and pump operated sufficiently to obtain a true sample of the underground water at elevation 413.00' MSL.

Water samples to be collected in a clean one gallon plastic bottle for delivery to laboratory for analysis.

Water samples to be analyzed for chemical composition for components as required by the Bureau of Solid Waste Management, Missouri Division of Health.

Copies of geologic log of drilled holes and laboratory analysis with other pertinent data to be forwarded to the Bureau of Solid Waste Management in triplicate.

If this procedure is in accordance with your requirements, please let us have your approval.

Very truly yours,

ELBRING COMPANY

Robert R. Leavy

Robert R. Leavy
Vice President

RRL/csw

cc: W.J. McCullough, West Lake Landfill, Inc.
Floyd C. Wallace

letter dated 4-11-73